Drawings

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jong Chul Ye et al, "Rate-Distortion Optimized Data Partitioning for Video Using Backward Adaptation" 2003 IEEE International Conference on Acoustics, Speech and Signal Processing Proceedings (ICASSP), Hong Kong, April 6-10, 2003, New York, NY: IEEE, US, col. 1 of 6, 6 April 2003, pages 637-640 in view of Ziaodong Fan et al: "Rate-distortion Optimization of a Macroblock-Based Progressive Fine Granularity Scalable

Video Codec". Proceedings of the 2002 IEEE International Symposium on Circuits and Systems, Phoenix, AZ, US 26-29 May 2002, vol. 4, pages 540-543.

Regarding claims 1, 9 and 17-19, Ye discloses an apparatus for implementing a method of partitioning data. The video is separated into blocks (abstract) and the DCT coefficients are determined for the DCT blocks (Introduction). A break point or partitioning point is determined on the convex rate-distortion curve for each DCT block (introduction). DCT run-level pairs are generated (introduction). The rate-distortion optimized data partitioning section provides further detail of determining the slope of the convex hull for the encoding and decoding of the run-level pairs. Ye does not disclose determining the partitioning point by analyzing the slope of lines only between adjacent pairs of run-level pairs which lie on the convex hull and encoding the pairs based on that point.

Fan discloses a method of rate-distortion optimization of video data. Fan determines a rate-distortion optimal selection of an enhancement layer in section 3.1 and 3.2. The data pairs are represented by points in the coordinate system such as the points shown in figure 2. The slope between adjacent points on the curve is obtained and the convex hull of the R-D curve can be successfully traced by employing the algorithm shown in section 3.2. The data is encoded according to this algorithm. The combination of Ye and Fan discloses the recited steps of the method. It would have been obvious for one of ordinary skill in the art at the time of the invention to have combined the elements using known methods and, that in combination, each element

merely performs the same function it does separately. In addition, one of ordinary skill in the art would have recognized the results of the combination were predictable.

Regarding claims 2 and 10, Ye discloses the exact location of the break point can be easily deduced at the encoder and decoder synchronously from the preceding DCT pairs using backward adaptation (introduction).

Regarding claims 3-6 and 11-13, Fan discloses a method of rate-distortion optimization of video data. Fan determines a rate-distortion optimal selection of an enhancement layer in section 3.1 and 3.2. The data pairs are represented by points in the coordinate system such as the points shown in figure 2. The slope between adjacent points on the curve is obtained and the convex hull of the R-D curve can be successfully traced by employing the algorithm shown in section 3.2. The data is encoded according to this algorithm.

Regarding claims 7, 8 and 14, Fan discloses determining the slope between the adjacent points of the curve as stated above. The slope values will be compared to previous slope values to determine of the points are found on the convex hull. As shown in figure 2, the slope of the convex hull will approach zero as the curve approaches the x axis. Therefore, the slope of the curve will continue to decrease as the adjacent points on the curve are used to determine the slope. The first and last pairs will not be used since there is no preceding pair for the first pair and no following pair for the last pair.

Regarding claims 15 and 16, Ye discloses the process is implemented in the encoder and the decoder (introduction). A receiver will receive the transmitted encoded data and recover the originally transmitted information.

Regarding claim 20, Ye discloses an apparatus for implementing a method of partitioning data. The video is separated into blocks (abstract) and the DCT coefficients are determined for the DCT blocks (Introduction). A break point or partitioning point is determined on the convex rate-distortion curve for each DCT block (introduction). DCT run-level pairs are generated (introduction). The rate-distortion optimized data partitioning section provides further detail of determining the slope of the convex hull for the encoding and decoding of the run-level pairs. Ye does not disclose determining the partitioning point by analyzing the slope of lines only between adjacent pairs of run-level pairs which lie on the convex hull and encoding the pairs based on that point. Ye discloses the process is implemented in the encoder and the decoder (introduction). A receiver will receive the transmitted encoded data and recover the originally transmitted information.

Fan discloses a method of rate-distortion optimization of video data. Fan determines a rate-distortion optimal selection of an enhancement layer in section 3.1 and 3.2. The data pairs are represented by points in the coordinate system such as the points shown in figure 2. The slope between adjacent points on the curve is obtained and the convex hull of the R-D curve can be successfully traced by employing the algorithm shown in section 3.2. The data is encoded according to this algorithm. The combination of Ye and Fan discloses the recited steps of the method. It would have been obvious for one of ordinary skill in the art at the time of the invention to have combined the elements using known methods and, that in combination, each element

merely performs the same function it does separately. In addition, one of ordinary skill in the art would have recognized the results of the combination were predictable

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
6/7/2010